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ABSTRACT

This study explored the relationships among service capability (full-time equivalent staff per thousand students by subject matter area) and selected governance/management variables including unit revenues, unit expenditures, enrollment size, valuation, and enrollment trends in local school districts. Data were collected on a stratified random sample of 45 local school districts for a seven-year time period. The results indicated that significant relationships existed between service capability and selected variables and the concept of service capability has considerable potential in dealing with the issue of equal access to educational opportunity. (Author)

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SELECTED GOVERNANCE/MANAGEMENT VARIABLES AND PROGRAM SERVICE CAPABILITY IN PUBLIC SCHOOLS

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SELECTED GOVERNANCE/MANAGEMENT VARIABLES AND PROGRAM SERVICE CAPABILITY IN PUBLIC SCHOOLS

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Charles H. Sederberg

University of Minnesota

This study explored relationships among levels of service capability over time and selected independent variables associated with the governance/management of local elementary-secondary school districts. Service capability was defined as full-time equivalent (FTE) staff per thousand students by program or service area. The independent variables were enrollment size, wealth (adjusted assessed valuation), expenditure level (dollars per weighted pupil unit in average daily membership), and enrollment trends (increasing, stable, and decreasing). The study method employed multivariate analysis of variance to test relationships and interactions among 35 indicators of service capability within each district in a random sample of 45 districts stratified by the independent variables. Study procedures, findings, and conclusions are reported in the following sections.

I. Background of the Problem

The conceptual background of the problem stems from constitutional mandates for "uniform" and "thorough and efficient" systems of public schools and equal protection under the law. The school finance reform

movement was spearheaded by court cases seeking enforcement/interpretation of these mandates.[1]

The school finance cases tended to focus on educational input measures. Unequal access to unit revenue and unequal unit expenditure have been cited as evidence of injustice. The need for valid input measures persists. Effects of individual differences, varying socio-economic circumstances, resistance to evaluation, and technical problems of measurement promise long delays in the availability of readily applied output measures.

Unit revenues and expenditures have serious limitations as indicators of access to educational opportunity. Equalized revenue may not produce equal expenditures and equal expenditure, in turn, may not produce equal educational services. In state--local district systems, locally negotiated salary schedules, differing distributions of staff training and experience, fluctuating enrollments, population sparsity, and differing program needs or preferences constitute cost-disequalizing factors. Conceivably, the same factors could produce unequal access to programmatic learning opportunities and services under a system of enforced equalized expnditure. These factors and forces were all affecting the governance/management of the population of Minnesota school districts from which the sample was drawn. Development of the service capability concept was pursued in this and other studies because of its potential as a fiscally neutral indicator of equality of educational opportunity.

II. Statement of the Problem

The central problem in the study was to ascertain the relationship or association between/among service capability and selected independent

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[1] See Betsy Levin (ed.), Future Directions for School Finance Reform. (Lexington: Lexington Books, 1974).

variables. The problem was further defined by the following research questions:

A. In what program areas did service capability change significantly in the sample districts during the period 1969-70 through 1975-76?

B. Which of the independent variables are associated with the significant changes in service capability identified in Question "A" above?

III. Design of the Study

The design of the study is summarized in the following sections:

A. Population and Sampling. The population consisted of all Minnesota independent school districts in operation during the years 1969-70 through 1975-76 inclusive. After districts which consolidated during the study period or for which stratification data were not complete had been dropped, the sampling frame contained 426 districts.

Districts were stratified on the bases of enrollment size, wealth, expenditure level, and enrollment trends. Districts were categorized as "large" if they served 1.317 (33rd percentile) or more resident weighted pupil units (K=.5, 1-6=1.0 and 7-12=1.5) in average daily attendance (ADA) during 1969-70 and "small" if they served fewer. "High valuation" districts were at or above $8,430 Equalized Aid Review Committee (EARC) valuation per pupil unit in ADA and "low valuation" if below that figure in 1969-70. "High expenditure" districts spent $663 or more in adjusted maintenance cost per pupil unit in average daily membership (ADM) while "low expenditure" districts spent below that amount. The $663

amount represented an adjusted maintenance cost for 1970-71 to be used as a base in calculation of future foundation aid payments. In terms of enrollment trends, "growing" districts increased enrollment 6 per cent or more, "stable" districts fluctuated less than ± 6 percent, and "declining" districts decreased 6 per cent or more during the period 1970-71 through 1974075. A computer program placed all districts into 24 cells on the bases of stratification characteristics.

A ten percent sample was drawn at random from each cell. Sample districts were randomly replaced if unique organizational characteristics negated collection of uniform data across the time period. The final stratified random sample of districts (N = 45) imposed two limitations on the study; 1) while large districts were represented, no districts serving cities of the first class (Minneapolis, St. Paul, Duluth) were included and 2) the sample was representative of school district organizations, but not representative of school districts where most students attend school.

B. Sources of Data. All data were collected from official files of the State Department of Education. Input data consisted of enrollment by grade by district by year (SDE Form F23-5) and selected staffing data (DES Form F30-23). Staffing data collected for this study included a 6-digit assignment code (teaching area or position classification), a 2-digit grade level code, and a 2-digit periods--per-week code in addition to teacher file and district identification by year. All data were stored on magnetic tape.

C. Treatment of Data. The statistic, service capability, was developed in three stages during an earlier research and development effort.[2] In summary, the first stage routine aggregated teacher assignment codes into 35 program categories by district. These 35 program categories constitute the indicators of service capability used in the multivariate analysis of variance. The second stage routine converted the assignments accumulated by district to full-time equivalents (FTE) through a series of decision rules applied to numbers of periods taught or assigned per week in each category. The third stage routine aggregated enrollments associated with personnel assignments (elementary, secondary, and total) for each district by year and computed the number of FTE staff per 1000 students for each program category. Means and standard deviations for service capability were printed by program category by district, by year with aggregations for all districts and for each sample stratification. A four-way multivariate analysis of variance[3] (size, wealth, expenditure, and enrollment trends) was applied to each program category to identify differences which were significant at the .05 level. The technique consisted of transforming the seven measures taken on each variable (one for each year) into six linearly independent combinations. These six transformed variables were then analyzed multivariately as dependent variables against the two by two by two by three sampling frame. UMST570, a multivariate statistical analysis program maintained by the University Computer Center, University of Minnesota, on the University CYBER 74 computer performed the necessary calculations.

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[2] Charles H. Sederberg and Vernon L. Hendrix, "Monitoring Achievement of Educational Governance/Management Policy Goals". Paper presented to AERA, New York, 1977. ERIC ED 136 424.

[3] R. Darrell Bock, Multivariate Statistical Methods in Behavioral Research, (New York: McGraw-Hill Book Company, 1975), pp. 447-505.

IV. Results of the Study

The analytical procedures produced F-ratios for all 16 tests on each of the 35 service capability categories and generated 560 tables of mean service capability relating years, sample stratification, and service capability categories. These statistics were used to answer the research questions stated above.

A. Research Question "A". The F-ratios reported in Table 1 were utilized to answer the first research question which was:

"In what perogram areas did service capability change significantly in the sample districts during the period 1969-70 through 1975-76?"

The statistics in Table 1 indicate that 21 out of 35 service capability categories showed change (probability .05) on one or more of the 16 tests during the study period. The changing categories, identified by asterisks in Table 1, are listed below.

Total Reported Staff
Line Administration
General Admin. (Supt.)
Elementary Admin. (Prin.)
Secondary Admin. (Prin.)
Regular Elementary Inst.
Early Elementary
Elementary P.E.
Elementary General Music
Secondary Art
Distributive Education
English Language Arts
Foreign Language
Secondary Music
Natural Science
Office and Business Ed.
Trade and Industrial
Elementary Special Ed.
Secondary Special Ed.
Library Media
District Wide Library
Secondary Library

TABLE 1

F-Ratios From a Multivariate Analysis of Variance Using Thirty-Five Indicators of Program Service Capability for the Years 1969-70 Through 1975-76 in a Stratified Random Sample of Minnesota School Districts

Service Capability Category	Test															
	1 Y	2 Y-N	3 Y-X	4 Y-NX	5 Y-W	6 Y-WN	7 Y-WX	8 Y-WNX	9 Y-S	10 Y-SN	11 Y-SX	12 Y-SNX	13 Y-SW	14 Y-SWN	15 Y-SWX	16 Y-SWXN
1. Total Reported Staff	5.68*	2.86*	6.47*	.91	2.11	1.46	.64	1.31	2.28	1.81	2.36	1.68	.64	.55	.34	2.07
2. -Line Administration	3.33*	2.59*	2.45	2.16*	1.38	2.03	2.11	1.28	.79	1.55	2.30	1.85	3.87*	1.70	.64	1.05
3. =General (Supt.)	2.83*	2.39*	2.05	4.94*	1.01	2.17*	2.39	1.68	.77	1.33	.25	2.78*	2.14	2.10*	1.12	.98
4. =Elementary (Prin.)	1.97	1.29	2.85*	.35	.62	1.2	.11	.71	.73	.30	.51	.14	.29	1.11	.39	.74
5. =Secondary (Prin.)	3.77*	1.45	3.48*	3.52*	1.81	2.41*	5.13*	2.55*	2.09	1.51	6.54*	3.86*	2.93*	2.23*	2.71	4.53*
6. -Regular Elementary Inst.	2.57	1.05	4.21*	.47	.58	.73	.59	.55	.53	.45	1.53	.49	.61	.51	.33	1.32
7. =Early Elementary	1.67	1.01	2.18	.54	1.27	.72	2.68	.81	1.90	.19	1.14	.63	3.03*	.85	1.60	.83
8. =Grades 1-6	3.14	1.11	1.66	.60	1.60	.91	.77	.38	.26	.54	.71	.73	1.54	.50	.69	.57
9. =Art	1.67	1.13	.94	.65	.71	.85	.98	.66	.90	.87	1.12	.66	.64	.92	1.05	.45
10. =Remedial Reading	.83	1.71	.95	.67	.64	.62	1.05	.90	.17	.92	.44	.96	.47	.71	.44	.73
11. =Physical Education	1.20	1.84	6.18*	3.54*	.75	1.27	.84	1.00	.88	1.51	.88	2.03	1.02	2.15*	.95	1.66
12. =General Music	6.25*	.26	.77	1.23	.44	.79	1.01	.51	.53	.61	.79	.72	.31	.18	.36	.92
13. =Instrumental Music	.43	.61	.63	1.37	.36	.53	.61	.39	.86	1.08	1.19	.66	1.50	.87	.77	.94
14. -Regular Secondary Inst.	2.31	1.23	.84	.83	.97	.96	1.15	.73	1.19	.92	.32	1.74	.83	.30	.89	.43
15. =Agriculture	.81	.68	.34	.62	2.62	.83	.31	1.71	1.91	.93	.33	.43	.48	1.77	1.89	.86
16. =Art	2.33	1.10	1.21	2.40*	.93	2.08*	2.37	1.32	2.79*	1.17	.72	2.30*	.16	1.75	2.57	1.23
17. =Distributive Ed.	3.23*	1.71	1.91	1.57	1.77	2.72*	4.00*	2.39*	8.99*	2.62*	.97	1.86	1.65	1.51	1.77	1.97
18. =English Lang. Arts	2.87*	.68	.73	1.32	.56	1.49	.69	1.63	.66	.50	1.17	.43	.25	.25	.30	.91
19. =Foreign Language	10.29*	1.68	.83	1.33	.42	2.50*	.17	.76	.61	1.07	1.15	1.28	1.22	.80	2.34	.33
20. =Health, P.E., & Safety	.41	1.05	1.52	.97	.98	.55	1.00	.96	.50	.76	.26	.55	1.40	.76	.96	.52
21. =Home Economics	1.60	1.61	.89	.54	.28	.87	.48	.50	.74	.89	.53	1.24	1.00	.36	.34	.65
22. =Industrial Arts	1.58	.90	.66	1.19	1.26	.82	1.05	1.00	1.03	.79	.63	.57	.43	.52	1.00	1.05
23. =Mathematics	1.66	1.17	1.20	.73	.50	1.21	1.45	.45	.56	.42	1.41	.50	.11	.69	.67	.66
24. =Music	2.75*	1.60	.79	1.01	.58	1.19	.86	1.73	.56	.95	.30	1.02	.40	1.42	1.00	.69
25. =Natural Science	3.05*	.34	1.99	.58	1.26	.81	1.05	1.24	2.53	.64	2.86*	.43	1.03	1.14	.20	1.25
26. =Office & Bus. Ed.	67.76*	.87	.58	.78	3.22*	2.06	1.69	1.05	2.83*	.66	2.04	1.37	2.92*	2.10*	1.75	.10
27. =Social Science	2.01*	1.31	1.78	.77	1.25	.87	2.62	.69	.44	1.14	.71	.77	1.84	.58	2.46	94
28. =Trade & Industrial	27.01*	3.08*	12.86*	7.92*	14.91*	3.67*	33.59*	4.86*	9.71*	5.54*	6.74*	8.08*	3.04*	6.58*	3.79*	1.20*
29. -Elementary Special Ed.	13.83*	1.38	1.33	1.38	2.13	1.14	2.31	.77	.21	1.12	1.47	.96	2.46	1.51	.66	.23
30. -Secondary Special Ed.	12.09*	2.01	.57	.96	1.86	3.55*	3.96*	1.93	2.28	.48	2.48	1.52	.40	2.06	2.43	2.13

Table 1 Con't.

	Test															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
31. -Pupil Personnel	3.08	1.36	.46	.80	.21	.89	.49	.52	.99	.98	.86	.67	.24	1.29	1.96	.70
32. -Library, Media	2.62	1.62	1.07	.46	3.08*	1.05	.24	.77	.22	1.04	.79	1.10	.76	1.37	.77	67
33. =District Wide	2.98*	5.46*	9.04*	3.75*	6.68*	4.64*	2.68	3.91*	.48	3.58*	4.46*	2.98*	2.43	4.80*	.96	4.42*
34. =Elementary	1.15	.79	.25	.48	1.14	.75	.14	1.45	1.11	.60	.50	.73	1.15	1.45	1.02	.56
35. =Secondary	1.94	1.98	.41	1.16	1.29	1.45	4.65*	1.67	.91	.71	1.12	1.05	1.00	1.17	1.31	1.12
Degrees Freedom	6/16	12/32	6/16	12/32	6/16	12/32	6/16	12/32	6/16	12/32	6/16	12/32	6/16	12/32	6/16	12/32

Y = Years
N = Enrollment Trend (Decreasing, Stable, Increasing
X = Expenditure
W = Wealth
S = Enrollment Size

B. Research Question "B". The second research question was as follows:

"Which of the independent variables are associated with the significant changes in service capability identified in Question "A"?

The 560 tables of means were employed to interpret the association between the change in a service capability category and the independent variable involved in the test. To facilitate the interpretation of the tabled means, a computer program was employed to generate visual plots. The tabled means for tests which indicated significant differences are reported in the following responses to Question "B" for selected program service capabilities identified in Question "A". Generally, tables of means are provided for statistically significant results obtained from Test #1 and associated two and three-way interactions. Tables of means are identified by the number of variable and particular test under discussion. While all significant tests reported were examined, not all were selected for discussion in this paper. Investigator judgement was exercised in selection based on a criterion of "practical importance". As a result, most of the following discussions relate to Test #1 and two and three-way tests related to it. Applying this criterion resulted in the non-selection of some three-way tests such as Test #12 and four-way test such as Test #16. Although they may have been statistically significant, their practical importance was deemed low because they might reflect the deviation of one particular year. Responses to Research Question "B" are reported in the following sections:

1. Total Reported Staff

When variable one, total reported district staff, is examined, we find that service capability decreases through the first three years by slightly more than four, increases for the next three years to almost its original level, and then drops markedly in the 1975-76 year. When this pattern is examined in relation to enrollment trend, the means in Table/variable 1 show that the increase and decrease over the last four years occured primarily in the decreasing enrollment districts, whereas the stable and increasing enrollment districts exhibit very little change over the last four years. These statistics indicate that the state educational governance/management system tended to exert a stablizing and equalizing effect on service capability for stable and increasing enrollment trend districts, but did not have the same effect decreasing enrollment trend districts. In relation to expenditure level, the same general trend was observed for total district staff, but the stablizing effect was more prominent for high expenditure districts than for low expenditure districts. In summary, the data indicate that total district staff service capability has fluctuated with a net decrease by the end of the seven-year study period.

TABLE/VARIABLE 1 CELL MEANS FOR TEST Y

SERVICE CAPABILITY TOTAL DISTRICT STAFF

******** C E L L ********				YEAR						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	.	.	60.42	59.70	56.12	57.46	58.54	59.21	56.44

TABLE/VARIABLE 1 CELL MEANS FOR TEST Y.N

SERVICE CAPABILITY TOTAL DISTRICT STAFF

******** C E L L ********									
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	**** * * * * * * * Y E A R				* * * * * * * * ***	
				69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	.	DECR	64.61	62.22	61.37	60.72	62.36	64.56	59.82
.	.	.	STAB	60.84	61.28	55.33	56.31	57.04	57.06	54.86
.	.	.	INCR	54.23	54.10	50.23	54.73	55.59	55.13	54.18

TABLE/VARIABLE 1 CELL MEANS FOR TEST Y.X

SERVICE CAPABILITY TOTAL DISTRICT STAFF

******** C E L L ********									
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	**** * * * * * * * Y E A R				* * * * * * * * ***	
				69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	LOW	.	55.51	57.53	53.15	55.29	56.24	58.10	54.53
.	.	HIGH	.	68.49	63.26	61.00	61.03	62.35	61.05	59.59

2. Total Line Administration

The means of Table/Variable 2 indicate that service capability for total line administration fluctuated rather sporadically. When this pattern was examined by enrollment trend, it appeared that stable and increasing enrollment districts exhibited a sharp decrease in the fourth year followed by a slight rise and stabilzation over the last three years. However, decreasing enrollment districts experienced a continuing rise followed by a slight decrease in the seventh year. Again, it seemed that stable and increasing districts tend to stablize and become more equalized whereas the decreasing enrollment trend districts fluctuated to a greater extent. When expenditure level was examined in relationship to enrollment trend and change across time, low expenditure decreasing

enrollment districts fluctuated more drastically while low expenditure stable and increasing districts exhibited little change across the seven-year period. For high expenditure districts, however, the pattern was reversed as high expenditure decreasing enrollment districts remained fairly stable over the seven-year span whereas high expenditure stable and increasing enrollment districts dropped considerably and fluctuated more drastically. Finally, district size and wealth appeared to interact with the change in service capability across the seven year span for total line administration. For both high and low wealth large districts, very little change was observed. Small high wealth districts exhibited a relatively smooth rise in service capability to the 1973-74 year, followed by a decline. Small low wealth districts exhibited a relatively marked drop for the third and fourth years with a rise peaking in the sixth year followed by a decrease. In summary it appeared that total line administration service capability fluctuated more drastically for small low wealth districts, although the general level changed little across the seven year span.

TABLE/VARIABLE 2 CELL MEANS FOR TEST Y

SERVICE CAPABILITY TOTAL LINE ADMINISTRATION

******** C E L L ********				YEAR						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	.	.	3.76	4.04	3.74	3.77	4.07	4.04	3.81

TABLE/VARIABLE 2 CELL MEANS FOR TEST Y.N

SERVICE CAPABILITY TOTAL LINE ADMINISTRATION

******** C E L L ********				YEAR						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	.	DECR	3.96	4.23	3.82	4.33	4.70	4.93	4.55
.	.	.	STAB	4.05	4.23	4.13	3.93	4.03	3.74	3.52
.	.	.	INCR	3.10	3.53	3.11	2.8	3.28	3.27	3.26

TABLE/VARIABLE 2 CELL MEANS FOR TEST Y.NX

SERVICE CAPABILITY TOTAL LINE ADMINISTRATION

******** C E L L ********				YEAR						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	LOW	DECR	3.67	3.72	3.62	3.88	4.28	4.53	3.98
.	.	LOW	STAB	3.51	3.67	3.91	3.98	3.87	4.06	3.49
.	.	LOW	INCR	2.90	3.17	2.98	2.94	3.13	3.08	3.07
.	.	HIGH	DECR	5.10	4.88	4.84	4.92	5.24	5.45	5.28
.	.	HIGH	STAB	5.03	5.25	4.70	3.85	4.32	3.14	3.57
.	.	HIGH	INCR	3.51	4.24	3.37	2.54	3.58	3.66	3.62

TABLE/VARIABLE 2 CELL MEANS FOR TEST Y.SW

SERVICE CAPABILITY TOTAL LINE ADMINISTRATION

******** C E L L ********				YEAR						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
SMALL	LOW	.	.	4.07	4.46	3.82	3.74	4.16	4.52	4.09
SMALL	HIGH	.	.	4.71	5.14	4.95	5.22	5.59	5.18	4.92
LARGE	LOW	.	.	2.63	2.67	2.57	2.45	2.46	2.41	2.44
LARGE	HIGH	.	.	2.78	2.85	2.69	2.62	2.87	2.93	2.84

3. Administration, General (Superintendency)

General superintendent service capability, as indicated in Table 3, rose rather steeply during the first three years followed by a sharp drop, a recovery in the next two years, and a general decline during the last two years. When this service capability category was examined in relation to enrollment trend it indicated that stable enrollment districts had a smooth gradual decrease in service capability over the seven year span, increasing enrollment districts remained rather level in service capability, and decreasing enrollment trend districts exhibited a climb during the first three years and then leveled off in service capability during the last four years. When the interaction of enrollment trend and expenditure level was examined with change in service capability for general superintendent, high expenditure decreasing enrollment districts continued to climb in service capability across the seven year period, low expenditure increasing enrollment trend districts continued to remain level across the seven year span, whereas the remaining four categories appeared to oscillate but stablize in the last two years at a common level of approximately 1.3. The interaction of enrollment trend with district wealth also interacts with change across years in service capability. It appears that among stable enrollment trends districts, the high wealth districts decrease across the seven year span, resulting in more equivalent service capabilities during the last two years. Among decreasing enrollment districts the high wealth districts exhibit a sharp increase from the first

to the second year followed by a relatively parallel differential across the remaining six years. Increasing enrollment trend districts appear to have maintained a relatively parallel stability across the seven year span, the low wealth districts having the higher service capability, after a marked crossing trend betwen the first two years.

TABLE/VARIABLE 3 CELL MEANS FOR TEST Y

SERVICE CAPABILITY GENERAL SUPERINTENDENT

******** C E L L ********				YEAR						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	.	.	1.25	1.37	1.43	1.31	1.39	1.38	1.30

TABLE/VARIABLE 3 CELL MEANS FOR TEST Y.N

SERVICE CAPABILITY GENERAL SUPERINTENDENT

******** C E L L ********				YEAR						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	.	DECR	1.11	1.40	1.51	1.47	1.57	1.57	1.57
.	.	.	STAB	1.71	1.58	1.43	1.39	1.52	1.41	1.42
.	.	.	INCR	.79	1.03	1.06	.95	.96	1.08	1.08

TABLE/VARIABLE 3 CELL MEANS FOR TEST Y.WX

SERVICE CAPABILITY GENERAL SUPERINTENDENT

******** C E L L ********				YEAR						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	LOW	DECR	.88	1.38	1.35	1.38	1.43	1.34	1.33
.	.	LOW	STAB	1.46	1.28	1.41	1.41	1.41	1.43	1.16
.	.	LOW	INCR	.94	.83	.92	.78	.89	.95	.96
.	.	HIGH	DECR	1.40	1.44	1.71	1.59	1.75	1.86	1.88
.	.	HIGH	STAB	2.17	2.14	2.12	1.37	1.73	1.37	1.32
.	.	HIGH	INCR	.49	1.43	1.33	1.38	1.10	1.34	1.31

TABLE/VARIABLE 3 CELL MEANS FOR TEST Y.WN

SERVICE CAPABILITY GENERAL SUPERINTENDENT

******** C E L L ********				***** Y E A R *****						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	LOW	.	DECR	1.14	1.11	1.13	1.16	1.19	1.23	1.26
.	LOW	.	STAB	1.36	1.20	1.20	1.16	1.16	1.20	1.01
.	LOW	.	INCR	.71	1.29	1.18	1.04	1.18	1.22	1.22
.	HIGH	.	DECR	1.69	1.53	1.68	1.62	1.75	1.72	1.71
.	HIGH	.	STAB	2.11	2.02	2.10	1.66	1.93	1.64	1.45
.	HIGH	.	INCR	.96	.51	.83	.78	.53	.80	.80

4. Administration, Elementary (Principal)

One significant result is indicated in Table 1 for changes in elementary principal service capability. Low expenditure level districts exhibited a steady climb across the first six years followed by a drop the seventh year, whereas high expenditure districts indicated a gradual decrease to the third year followed by a leveling for the last four years. The net result was that low expenditure districts achieved higher levels of service capability during the last four years than did high expenditure districts.

5. Administration, Secondary (Principal)

Table 5, which presents means for secondary principal service capability, shows rather drastic fluctuations in service capability resulting in a net decrease over the seven year period. The continuation of Table 5 indicates an interaction with expenditure level. The pattern of means indicates greater fluctuations for higher expenditure level districts, often in opposite direction to low expenditure districts. There was also an interaction between

enrollment trend and expenditure level for changes in service capability across the seven year period. This interaction appears to be caused by a severe drop in service capability from approximately 5 to less than 2 in the 1971-72 and 1972-73 for high enrollment districts. A severe drop is also noted for high expenditure level stable enrollment districts in 1974-1975. In general, it appears that during the last four years the difference between high and low expenditure districts within the same enrollment trend classification decreases and in two cases (high and low expenditure level) they exchange positions. Examination of the wealth by enrollment trend interaction shows a general convergence toward more similar service capability levels for the six subgroups. The pattern of fluctuations is similar to that found in the enrollment trend by expenditure level interaction except the low wealth increasing enrollment trend districts exhibit the major decrease in the 1971-1972 and 1972-1973 school years. The high wealth level increasing enrollment districts exhibit a gradual climb over the seven year span. The wealth by expenditure interaction in Table/variable 5 shows that the low wealth high expenditure level districts exhibit the precipitous drop during the third and fourth years. The pattern of convergence is evident here also. The size by expenditure level indicates relatively stable service capabilities for all but small high expenditure districts, who exhibit severe drops in the third and fourth years followed by fluctuations remaining above the level of the other three gourps of districts. The size by wealth level interaction shows that it is the small low wealth districts that exhibit the precipitous drop

during the third and fourth year. The small high wealth districts in service capability but remain in the highest of the four groups.

TABLE/VARIABLE 4 CELL MEANS FOR TEST Y.X

SERVICE CAPABILITY ELEMENTARY PRINCIPAL

******** C E L L ******** ENROL SIZE	WEALTH	EXPEND	ENROL TREND	**** * * * * * * * * YEAR * * * * * * * * * *** 69-70	70-71	71-72	72-73	73-74	74-75	75-76
•	•	LOW	•	1.45	1.65	1.64	2.06	2.24	2.55	2.27
•	•	HIGH	•	2.28	2.12	1.95	1.94	2.05	2.08	1.87

TABLE/VARIABLE 5 CELL MEANS FOR TEST Y

SERVICE CAPABILITY SECONDARY PRINCIPAL

******** C E L L ******** ENROL SIZE	WEALTH	EXPEND	ENROL TREND	**** * * * * * * * * YEAR * * * * * * * * * *** 69-70	70-71	71-72	72-73	73-74	74-75	75-76
•	•	•	•	3.26	3.59	2.99	2.89	3.17	2.94	2.89

TABLE/VARIABLE 5 CELL MEANS FOR TEST Y.X

SERVICE CAPABILITY SECONDARY PRINCIPAL

******** C E L L ******** ENROL SIZE	WEALTH	EXPEND	ENROL TREND	**** * * * * * * * * YEAR * * * * * * * * * *** 69-70	70-71	71-72	72-73	73-74	74-75	75-76
•	•	LOW	•	2.69	3.13	2.47	2.72	2.78	2.79	2.48
•	•	HIGH	•	4.21	4.36	3.58	3.17	3.82	3.19	3.57

TABLE/VARIABLE 5 CELL MEANS FOR TEST Y.MX

SERVICE CAPABILITY SECONDARY PRINCIPAL

******** C E L L ******** ENROL SIZE	WEALTH	EXPEND	ENROL TREND	**** * * * * * * * * YEAR * * * * * * * * * *** 69-70	70-71	71-72	72-73	73-74	74-75	75-76
•	•	LOW	DECR	2.63	2.75	2.16	2.72	2.95	3.06	2.40
•	•	LOW	STAB	2.94	3.71	3.11	2.96	3.02	2.97	2.78
•	•	LOW	INCR	2.40	2.76	2.05	2.38	2.27	2.22	2.15
•	•	HIGH	DECR	4.56	4.68	4.28	4.02	4.43	4.34	4.36
•	•	HIGH	STAB	3.19	3.85	3.85	3.35	3.42	1.70	2.65
•	•	HIGH	INCR	5.11	4.54	1.94	1.41	3.34	3.42	3.55

TABLE/VARIABLE 5 CELL MEANS FOR TEST Y.WN

SERVICE CAPABILITY SECONDARY PRINCIPAL

ENROL SIZE	WEALTH	EXPEND	ENROL TREND	YEAR 69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	LOW	.	DECR	3.55	2.59	2.32	2.75	2.81	2.87	2.33
.	LOW	.	STAB	2.72	3.27	2.87	2.45	2.50	2.45	2.58
.	LOW	.	INCR	4.18	4.22	2.28	1.96	2.84	2.78	2.66
.	HIGH	.	DECR	3.44	4.05	3.35	3.53	3.96	3.97	3.68
.	HIGH	.	STAB	3.38	4.31	3.93	3.83	3.91	2.62	2.91
.	HIGH	.	INCR	1.57	1.62	1.49	2.25	2.19	2.31	2.51

TABLE/VARIABLE 5 CELL MEANS FOR TEST Y.WX

SERVICE CAPABILITY SECONDARY PRINCIPAL

ENROL SIZE	WEALTH	EXPEND	ENROL TREND	YEAR 69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	LOW	LOW	.	3.01	3.09	2.41	2.51	2.42	2.41	2.28
.	LOW	HIGH	.	4.59	4.45	2.85	1.89	3.42	3.34	3.29
.	HIGH	LOW	.	2.26	3.19	2.55	3.00	3.27	3.29	2.75
.	HIGH	HIGH	.	4.00	4.30	3.97	3.87	4.04	3.12	3.72

TABLE/VARIABLE 5 CELL MEANS FOR TEST Y.SX

SERVICE CAPABILITY SECONDARY PRINCIPAL

ENROL SIZE	WEALTH	EXPEND	ENROL TREND	YEAR 69-70	70-71	71-72	72-73	73-74	74-75	75-76
SMALL	.	LOW	.	3.05	3.64	2.50	2.99	2.98	3.10	2.62
SMALL	.	HIGH	.	5.89	6.13	4.71	3.67	4.92	3.77	4.52
LARGE	.	LOW	.	1.91	2.06	2.42	2.13	2.37	2.12	2.18
LARGE	.	HIGH	.	2.31	2.36	2.30	2.62	2.58	2.55	2.50

TABLE/VARIABLE 5 CELL MEANS FOR TEST Y.SW

SERVICE CAPABILITY SECONDARY PRINCIPAL

ENROL SIZE	WEALTH	EXPEND	ENROL TREND	YEAR 69-70	70-71	71-72	72-73	73-74	74-75	75-76
SMALL	LOW	.	.	4.43	4.39	2.73	2.47	3.02	3.12	2.92
SMALL	HIGH	.	.	3.56	4.48	3.62	3.85	4.11	3.49	3.50
LARGE	LOW	.	.	2.00	2.12	2.24	2.15	2.23	2.00	2.03
LARGE	HIGH	.	.	2.21	2.30	2.50	2.59	2.74	2.68	2.67

6. Total Regular Elementary Instruction

The single significant result for total regular elementary instruction indicates that high expenditure districts exhibit a severe drop during the 1970-1971 school year.

7. Early Elementary (Principally Kindergarten)

The single significant result for early elementary service capability shows that large districts, both high and low wealth, remain stable across the seven year span at a service capability of approximately 22. The small districts exhibit a decrease, which is more severe in the third year for low wealth districts, followed by an increase and general decline over the last three years. At the end of the time span the small high wealth districts are significantly higher than the other three groups.

TABLE/VARIABLE 6 CELL MEANS FOR TEST Y.X

SERVICE CAPABILITY TOTAL ELEMENTARY REGULAR INST

******** C E L L ******** ENROL SIZE	WEALTH	EXPEND	ENROL TREND	**** * * * * * * * Y E A R * * * * * * * * *** 69-70	70-71	71-72	72-73	73-74	74-75	75-76
•	•	LOW	•	43.39	45.04	42.29	45.00	44.02	46.29	43.11
•	•	HIGH	•	59.95	49.00	46.24	47.04	48.70	46.98	44.95

TABLE/VARIABLE 7 CELL MEANS FOR TEST Y.SW

SERVICE CAPABILITY EARLY ELEMENTARY

******** C E L L ******** ENROL SIZE	WEALTH	EXPEND	ENROL TREND	**** * * * * * * * Y E A R * * * * * * * * *** 69-70	70-71	71-72	72-73	73-74	74-75	75-76
SMALL	LOW	•	•	24.32	22.53	19.40	27.07	28.36	24.62	19.89
SMALL	HIGH	•	•	28.40	26.60	27.12	28.03	32.55	31.71	29.35
LARGE	LOW	•	•	21.01	21.51	21.33	20.07	21.88	19.90	21.19
LARGE	HIGH	•	•	23.32	21.37	22.32	22.67	22.79	21.81	21.04

8. Elementary Phsycial Education

In Table/variable II the means indicate that low expenditure districts exhibit a rise and high expenditure districts exhibit a decrease in elementary physcial education service capability over the seven year span. When the expenditure level by enrollment trend interaction is examined it is the low expenditure decreasing and stable enrollment districts that increase whereas the low expenditure increasing enrollment districts exhibit at first a decrease and then a level service capability across a seven year span. Examining high expenditure districts those with stable enrollment trends exhibit a general decrease across a seven year span whereas the decreasing and increasing enrollment districts fluctuate drastically, and in opposite directions across a seven year span.

9. Elementary General Music

The single significant result in Table/variable 12 for elementary general music indicates a significant rise in the first and second year followed by a general leveling across the remaining years.

10. Secondary Art

An enrollment trend by expenditure level and enrollment trend by wealth level are indicated for secondary art service capability. The enrollment trend by expenditure level indicates that the six groups maintain rather level service capabilities across the seven year span with the exception of low expenditure decreasing enrollment districts dropping from relatively high (3.2) to an average level of approximately 1.6 by the fourth year. Conversely, high

expenditure increasing enrollment districts exhibit a rise to approximately 2.9 for the last three years.

TABLE/VARIABLE 11 CELL MEANS FOR TEST Y.X

SERVICE CAPABILITY ELEMENTARY PHYSICAL EDUCATION

******** C E L L ******** ENROL SIZE	WEALTH	EXPEND	ENROL TREND	**** * * * * * * * Y E A R	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	LOW	.		1.01	.94	.97	1.50	1.43	1.85	1.51
.	.	HIGH	.		3.06	2.29	2.50	2.08	2.54	2.49	2.18

TABLE/VARIABLE 11 CELL MEANS FOR TEST Y.NX

SERVICE CAPABILITY ELEMENTARY PHYSICAL EDUCATION

******** C E L L ******** ENROL SIZE	WEALTH	EXPEND	ENROL TREND	**** * * * * * * * Y E A R	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	LOW	DECR		.91	.67	.80	1.95	1.55	2.17	1.96
.	.	LOW	STAB		.55	.74	.87	1.30	1.56	1.93	1.21
.	.	LOW	INCR		1.76	1.52	1.29	1.25	1.12	1.40	1.40
.	.	HIGH	DECR		3.78	1.92	3.18	2.37	2.73	3.49	2.52
.	.	HIGH	STAB		3.17	3.25	2.66	2.01	2.15	2.11	2.42
.	.	HIGH	INCR		1.62	1.49	1.06	1.68	2.81	1.29	1.62

TABLE/VARIABLE 12 CELL MEANS FOR TEST Y

SERVICE CAPABILITY ELEMENTARY GENERAL MUSIC

******** C E L L ******** ENROL SIZE	WEALTH	EXPEND	ENROL TREND	**** * * * * * * * Y E A R	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	.	.		.90	1.93	1.77	1.84	1.99	2.03	1.93

TABLE/VARIABLE 16 CELL MEANS FOR TEST Y.NX

SERVICE CAPABILITY SECONDARY ART

******** C E L L ********				YEAR						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	LOW	DECR	3.29	2.49	2.08	1.47	1.45	1.80	1.47
.	.	LOW	STAB	1.41	1.53	1.33	1.53	1.42	1.91	1.64
.	.	LOW	INCR	1.89	1.33	1.54	1.83	1.88	1.98	1.53
.	.	HIGH	DECR	1.41	1.55	1.96	1.60	1.05	1.50	1.52
.	.	HIGH	STAB	1.67	1.29	2.30	1.65	1.65	1.55	1.63
.	.	HIGH	INCR	1.48	2.00	1.75	1.46	2.96	2.66	2.75

TABLE/VARIABLE 16 CELL MEANS FOR TEST Y.WN

SERVICE CAPABILITY SECONDARY ART

******** C E L L ********				YEAR						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	LOW	.	DECR	1.73	1.47	1.64	1.53	1.19	2.43	1.64
.	LOW	.	STAB	2.08	2.11	1.87	1.95	1.70	2.10	1.82
.	LOW	.	INCR	1.29	1.16	1.64	1.63	2.23	2.22	2.12
.	HIGH	.	DECR	2.81	2.35	2.20	1.54	1.31	1.32	1.43
.	HIGH	.	STAB	.85	.71	1.44	1.15	1.27	1.42	1.44
.	HIGH	.	INCR	2.68	2.34	1.55	1.85	2.26	2.16	1.57

TABLE/VARIABLE 16 CELL MEANS FOR TEST Y.S

SERVICE CAPABILITY SECONDARY ART

******** C E L L ********				YEAR						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
SMALL	.	.	.	1.99	1.77	1.72	1.48	1.59	1.97	1.66
LARGE	.	.	.	1.79	1.59	1.88	1.77	1.65	1.65	1.68

TABLE/VARIABLE 16 CELL MEANS FOR TEST Y.SNX

SERVICE CAPABILITY SECONDARY ART

******** C E L L ******** ENROL SIZE	WEALTH	EXPEND	ENROL TREND	**** * * * * * * * Y E A R	69-70	70-71	71-72	72-73	73-74	74-75	75-76
SMALL	.	LOW	DECR		3.86	2.85	2.29	1.30	1.50	1.93	1.52
SMALL	.	LOW	STAB		1.46	1.50	1.43	1.62	1.43	2.04	1.65
SMALL	.	LOW	INCR		1.63	1.29	1.42	1.88	2.03	2.14	1.34
SMALL	.	HIGH	DECR		.67	1.46	1.38	1.20	.50	1.15	1.03
SMALL	.	HIGH	STAB		1.67	1.09	2.11	1.71	1.56	1.85	2.04
SMALL	.	HIGH	INCR		1.38	1.67	1.57	.96	3.97	3.37	3.50
LARGE	.	LOW	DECR		1.30	1.25	1.34	2.03	1.27	1.33	1.32
LARGE	.	LOW	STAB		1.26	1.63	1.04	1.30	1.39	1.55	1.60
LARGE	.	LOW	INCR		2.15	1.37	1.65	1.78	1.73	1.81	1.72
LARGE	.	HIGH	DECR		2.41	1.67	2.74	2.14	1.79	1.97	2.17
LARGE	.	HIGH	STAB		1.67	1.50	2.49	1.59	1.74	1.25	1.23
LARGE	.	HIGH	INCR		1.58	2.32	1.93	1.95	1.96	1.96	1.99

The wealth level by enrollment trend interaction shows a general leveling and convergence across the seven year span. The difference between high and low wealth increasing enrollment districts is especially reduced. The size result for secondary art service capability is significant but is best explained in relationship to the size by enrollment trend by expenditure interaction. Here the means indicate that small low expenditure decreasing enrollment districts drop precipitously in service capability from 3.86 to a low of 1.3 followed by a slight rise to 1.52 at the end of the seven year span. Small high expenditure decreasing enrollment districts start out the lowest of all twelve groups, rise slightly and maintain that level for three years and then drop to the lowest of all groups in the 1973-1974 school year. This is followed by a slight increase but they finished the seven year span at the lowest for the twelve groups. However, small high expenditure increasing enrollment districts exhibit a rather level service capability for

the first four years, having started at 1.38 and then rise precipitously to almost fourth in 1973-74 and maintain that general level for the remaining two years.

11. Business and Distributive Education

Service capability for business and distributive education shows a general increase over the seven year span with a relatively high peak during the 1973-74 school year. Examination of the interactions with wealth level and expenditure level indicates that for low wealth districts with high expenditure levels after a sharp rise during the 1970-71 year a decline follows for the remaining five years. However, for low wealth low expenditure districts a consistant increase in service capability is exhibited with a peak occuring in the 1973-74 school year. For high wealth districts the pattern is reversed. Low expenditure districts exhibit a decrease and high expenditure districts exhibit an increase. The interaction of wealth and enrollment trend shows that high wealth increasing enrollment districts exhibit a precipitous drop and remain at a relatively low level whereas low wealth increasing and decreasing as well as high wealth decreasing districts show a climb over the seven year span peaks at the 1973-74 school year. Continuing in Table/variable seventeen it is indicated that large districts exhibit a relatively large and continuous increase in business and distributive education service capability over the seven year span whereas small districts remain below and at a relatively level service capability except for the peak in 1973-74. When the size by enrollment trend interaction is examined the

TABLE/VARIABLE 17 CELL MEANS FOR TEST Y

SERVICE CAPABILITY BUSINESS AND DISTRIBUTIVE EDUC

******** C E L L ********				**** * * * * * * * * Y E A R * * * * * * * * * ***						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	.	.	.07	.13	.11	.13	.21	.14	.12

TABLE/VARIABLE 17 CELL MEANS FOR TEST Y.WN

SERVICE CAPABILITY BUSINESS AND DISTRIBUTIVE EDUC

******** C E L L ********				**** * * * * * * * * Y E A R * * * * * * * * * ***						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	LOW	.	DECR	0	.13	.32	.18	.46	.29	.31
.	LOW	.	STAB	.05	0	0	0	0	0	0
.	LOW	.	INCR	0	.22	.16	.27	.31	.26	.19
.	HIGH	.	DECR	.04	0	.11	.11	.26	.11	.11
.	HIGH	.	STAB	.12	.17	.04	.15	.13	.11	.08
.	HIGH	.	INCR	.32	.47	.09	.08	.15	.16	.14

TABLE/VARIABLE 17 CELL MEANS FOR TEST Y.WX

SERVICE CAPABILITY BUSINESS AND DISTRIBUTIVE EDUC

******** C E L L ********				**** * * * * * * * Y E A R * * * * * * * * ***						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	LOW	LOW	.	.03	.07	.14	.16	.27	.17	.17
.	LOW	HIGH	.	0	.22	.10	.09	.09	.13	.06
.	HIGH	LOW	.	.11	.16	0	[illegible]	.14	0	0
.	HIGH	HIGH	.	.12	.12	.17	.24	.26	.24	.22

TABLE/VARIABLE 17 CELL MEANS FOR TEST Y.WNX

SERVICE CAPABILITY BUSINESS AND DISTRIBUTIVE EDUC

******** C E L L ********				**** * * * * * * * Y E A R * * * * * * * * ***						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	LOW	LOW	DECR	0	.22	.53	.31	.77	.49	.52
.	LOW	LOW	STAB	.06	0	0	0	0	0	0
.	LOW	LOW	INCR	0	.08	.12	.26	.33	.22	.19
.	LOW	HIGH	DECR	0	0	0	0	0	0	0
.	LOW	HIGH	STAB	0	0	0	0	0	0	0
.	LOW	HIGH	INCR	0	.65	.29	.28	.26	.39	.19
.	HIGH	LOW	DECR	0	0	0	0	.28	0	0
.	HIGH	LOW	STAB	0	0	0	0	0	0	0
.	HIGH	LOW	INCR	.64	.93	0	0	0	0	0
.	HIGH	HIGH	DECR	.08	0	.2[illegible]	.24	.24	.24	.24
.	HIGH	HIGH	STAB	.24	.33	.08	.29	.27	.21	.17
.	HIGH	HIGH	INCR	0	0	.18	.16	.31	.32	.28

TABLE/VARIABLE 17 CELL MEANS FOR TEST Y.S

SERVICE CAPABILITY BUSINESS AND DISTRIBUTIVE EDUC

******** C E L L ********				**** * * * * * * * Y E A R * * * * * * * * ***						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
SMALL	.	.	.	.06	.10	.06	.04	.17	.04	.06
LARGE	.	.	.	.08	.16	.19	.26	.28	.29	.23

TABLE/VARIABLE 17 CELL MEANS FOR TEST Y.SN

SERVICE CAPABILITY BUSINESS AND DISTRIBUTIVE EDUC

******** C E L L ********				**** * * * * * * * Y E A R * * * * * * * * * ***						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
SMALL	.	.	DECR	0	.06	.14	.08	.34	.11	.14
SMALL	.	.	STAB	.04	0	0	0	0	0	0
SMALL	.	.	INCR	.21	.37	0	.06	.14	0	0
LARGE	.	.	DECR	.08	0	.24	.24	.29	.28	.24
LARGE	.	.	STAB	.16	.22	.05	.19	.18	.14	.11
LARGE	.	.	INCR	0	.24	.28	.35	.37	.46	.35

greater increases exhibited by larger districts appears most prevelant in the increasing enrollment districts.

12. English Language Arts

Service capability in secondary English and laguage arts in Table/Variable 18 portrays a significant drop to the 1972-73 year followed by leveling and a slight decrease for the 1975-76 school year. This pattern is essentially the same for all sampling categories.

13. Foreign Language

Service capability in secondary foreign language exhibits one of the most dramatic and continuous decreases over the seven year span from 1.87 down to .93, a decrease of more than 50 per cent. The wealth by enrollment trend interaction indicates that it is the high wealth increasing enrollment districts that portray the greatest decrease, although they finish the seven year span at the highest position.

TABLE/VARIABLE 18 CELL MEANS FOR TEST Y

SERVICE CAPABILITY ENGLISH AND LANGUAGE ARTS

ENROL SIZE	WEALTH	EXPEND	ENROL TREND	YEAR 69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	.	.	10.49	10.63	10.00	8.69	8.89	8.89	8.32

TABLE/VARIABLE 19 CELL MEANS FOR TEST Y

SERVICE CAPABILITY SECONDARY FOREIGN LANGUAGE

ENROL SIZE	WEALTH	EXPEND	ENROL TREND	YEAR 69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	.	.	1.87	1.52	1.32	1.09	1.05	.95	.93

TABLE/VARIABLE 19 CELL MEANS FOR TEST Y.WN

SERVICE CAPABILITY SECONDARY FOREIGN LANGUAGE

ENROL SIZE	WEALTH	EXPEND	ENROL TREND	YEAR 69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	LOW	.	DECR	1.42	1.32	.89	.91	.82	.60	.34
.	LOW	.	STAB	1.67	.94	.85	.62	.65	.48	.77
.	LOW	.	INCR	1.43	1.05	1.22	.78	.95	.92	.97
.	HIGH	.	DECR	2.03	2.00	1.89	1.78	1.31	1.15	1.16
.	HIGH	.	STAB	1.52	1.60	1.19	.84	1.21	.97	.87
.	HIGH	.	INCR	3.56	2.59	1.96	1.62	1.45	1.86	1.40

14. Music

Secondary music capability shows a rather interesting and inexplicable pattern. Starting at a level of approximately 2.6 the service capability rises to an average level of approximately 3.6 for the following five years. In 1975-76 however, the service capability falls precipitously to near its original level in 1969-70.

15. Natural Science

Secondary natural science shows a steady decrease in service capability over the seven year span with slight peaks in 1970-71 and 1974-75. The size by expenditure level interaction indicates that it is the small high expenditure districts that exhibit the greatest drop, although they still remain highest at the end of the seven year span.

16. Office and Business Education

Although significant results are shown for secondary office and business service capability this appears to be a definitional artifact of a change department record keeping system.

TABLE/VARIABLE 24 CELL MEANS FOR TEST Y

SERVICE CAPABILITY SECONDARY MUSIC

******** C E L L ********				YEAR						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	.	.	2.67	3.50	3.72	3.60	3.73	3.68	2.98

TABLE/VARIABLE 25 CELL MEANS FOR TEST Y

SERVICE CAPABILITY NATURAL SCIENCES

******** C E L L ********				**** * * * * * * * Y E A R * * * * * * * * ***						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	.	.	6.80	7.28	6.53	6.08	5.82	6.09	5.69

TABLE/VARIABLE 25 CELL MEANS FOR TEST Y.SX

SERVICE CAPABILITY NATURAL SCIENCES

******** C E L L ********				**** * * * * * * * Y E A R * * * * * * * * ***						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
SMALL	.	LOW	.	6.60	7.38	7.08	6.12	6.03	6.12	5.63
SMALL	.	HIGH	.	9.17	9.43	7.96	7.48	6.13	7.04	6.71
LARGE	.	LOW	.	5.70	5.84	4.90	4.91	5.13	5.11	4.93
LARGE	.	HIGH	.	5.84	6.25	6.49	5.75	5.78	6.02	5.56

17. Trade and Insdustrial Education

Secondary trade and industrial education service portrays a dramatic climb beginning in the 1972-73 school year to a peak in the 1973-74 school year followed by a decrease for the last two years. When districts are categorized by enrollment trend the patterns differs for stable enrollment districts which illustrates a gradual climb over the last four years, whereas the decreasing and increasing enrollment districts exhibit a decrease to their near original level after the peak in 1973-74. When districts are categorized by expenditure level the high expenditure districts exhibit the greatest peak in 1973-74 followed by a decrease and rebound to slightly above the service capability

measure for low expenditure districts. The enrollment trend by expenditure level interaction indicates that the peaking in 1973-74 is greatest for high expenditure enrollment districts, whereas the remaining five groups remain relatively stable. Conversely, districts are categorized by wealth level and low wealth districts exhibit an increase during the last year, returning to the year 1973-74 peak, whereas high wealth districts do not rebound of the the drop in 1974-75. (The remaining effects appear to be artifacts.)

18. Elementary Special Education

Total elementary education service capability shows a continuing climb across the seven year span with an extra increase from 1973 to 1974. No interactions occured with sampling stratification variables.

TABLE/VARIABLE 28 CELL MEANS FOR TEST Y

SERVICE CAPABILITY TRADE AND INDUSTRIAL EDUC

******** C E L L ********				YEAR						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	.	.	.07	0	.00	.1[illegible]	.35	.15	.19

TABLE/VARIABLE 28 CELL MEANS FOR TEST Y.N

SERVICE CAPABILITY TRADE AND INDUSTRIAL EDUC

******** C E L L ********				YEAR						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	.	DECR	.05	0	0	.04	.45	.01	.09
.	.	.	STAB	.06	0	.01	.16	.13	.28	.34
.	.	.	INCR	.10	0	0	.09	.51	.14	.11

TABLE/VARIABLE 28 CELL MEANS FOR TEST Y.X

SERVICE CAPABILITY TRADE AND INDUSTRIAL EDUC

******** C E L L ********				**** * * * * * * * * Y E A R * * * * * * * * * ***						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	LOW	.	.09	0	0	.05	.23	.17	.13
.	.	HIGH	.	.04	0	.01	.17	.54	.11	.29

TABLE/VARIABLE 28 CELL MEANS FOR TEST Y.*X

SERVICE CAPABILITY TRADE AND INDUSTRIAL EDUC

******** C E L L ********				**** * * * * * * * * Y E A R * * * * * * * * * ***						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	LOW	DECR	.10	0	0	.06	.56	0	0
.	.	LOW	STAB	.03	0	0	[illegible]	.01	.31	.22
.	.	LOW	INCR	.16	0	0	.13	.17	.17	.15
.	.	HIGH	DECR	0	0	0	.02	.30	.02	.22
.	.	HIGH	STAB	.13	0	.13	.44	.36	.22	.54
.	.	HIGH	INCR	0	0	0	.01	1.21	.08	.04

TABLE/VARIABLE 28 CELL MEANS FOR TEST Y.*

SERVICE CAPABILITY TRADE AND INDUSTRIAL EDUC

******** C E L L ********				**** * * * * * * * * Y E A R * * * * * * * * * ***						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	LOW	.	.	.02	0	0	.04	.34	.20	.30
.	HIGH	.	.	.12	0	.01	.15	.35	.10	.09

TABLE/VARIABLE 29 CELL MEANS FOR TEST Y

SERVICE CAPABILITY TOTAL ELEMENTARY SPECIAL EDUC

******** C E L L ********				**** * * * * * * * * Y E A R * * * * * * * * * ***						
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	.	.	2.25	2.59	2.87	3.00	4.29	4.58	4.99

19. Secondary Special Education

Service capability for secondary special education exhibits the same steady climb across the seven year span. However, the wealth by enrollment trend interaction indicates that it is the high wealth increasing enrollment districts that exhibit the greatest amount of growth in secondary education service capability. The wealth by expenditure interaction shows that low wealth high expenditure districts, in addition to the steady climb, exhibit a peak during the 1972-73 school year.

20. Library - Media

A significant relationship is found for library media reading service capability with wealth level. Although there is no evidence of overall change across the seven year span, low wealth districts plummet to a relatively low service capability in 1972-73 followed by an increase to slightly above that for high wealth districts.

21. Library - Media General (District wide)

The significant change in this service capability is judged to be of marginal practical importance. The reason for this judgment stems from the fact that staff assignment codes occurred most frequently in very small districts having a single library assignment for grades K-12. Most of the library service capability for

TABLE/VARIABLE 3 CELL MEANS FOR TEST Y

SERVICE CAPABILITY TOTAL SECONDARY SPECIAL EDUC

******** C E L L ********										
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	**** * * * * * * * Y E A R * * * * * * * * * *** 69-70	70-71	71-72	72-73	73-74	74-75	75-7
.	.	.	.	.86	.87	.75	.93	1.13	1.22	1.5

TABLE/VARIABLE 30 CELL MEANS FOR TEST Y.WN

SERVICE CAPABILITY TOTAL SECONDARY SPECIAL EDUC

ENROL SIZE	WEALTH	EXPEND	ENROL TREND	YEAR 69-70	70-71	71-72	72-73	73-74	74-75	75-
.	LOW	.	DECR	0	1.05	.98	2.58	1.39	1.30	1.
.	LOW	.	STAB	.22	1.47	.79	.85	1.30	.90	2.
.	LOW	.	INCR	.04	.64	.65	.65	1.07	1.62	1.
.	HIGH	.	DECR	0	.25	.41	.38	.54	.71	1.
.	HIGH	.	STAB	.05	.78	.46	.74	.92	1.14	1.
.	HIGH	.	INCR	0	1.71	2.14	1.55	2.52	2.55	2.

TABLE/VARIABLE 3 CELL MEANS FOR TEST Y.WX

SERVICE CAPABILITY TOTAL SECONDARY SPECIAL EDUC

ENROL SIZE	WEALTH	EXPEND	ENROL TREND	YEAR 69-70	70-71	71-72	72-73	73-74	74-75	75-
.	LOW	LOW	.	.12	1.24	.64	.81	1.21	1.44	2.
.	LOW	HIGH	.	.05	.63	1.16	2.14	1.31	.76	1.
.	HIGH	LOW	.	0	.9	.73	.85	1.12	1.13	1.
.	HIGH	HIGH	.	.03	.89	.73	.55	.91	1.24	1.

TABLE/VARIABLE 32 CELL MEANS FOR TEST Y.W

SERVICE CAPABILITY TOTAL LIBRARY MEDIA READING

ENROL SIZE	WEALTH	EXPEND	ENROL TREND	YEAR 69-70	70-71	71-72	72-73	73-74	74-75	75-
.	LOW	.	.	1.77	1.98	1.53	1.31	1.37	1.50	1.
.	HIGH	.	.	2.09	1.78	1.57	1.68	1.76	1.83	1.

TABLE/VARIABLE 33 CELL MEANS FOR TEST Y

SERVICE CAPABILITY GENERAL LIBRARY MEDIA READ

******** C E L L ********				**** * * * * * * * Y E A R * * * * * * * * *
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	.	.	.83	.85	.64	.64	.60	.66	.57

TABLE/VARIABLE 33 CELL MEANS FOR TEST Y.M

SERVICE CAPABILITY GENERAL LIBRARY MEDIA READ

******** C E L L ********				**** * * * * * * * Y E A R * * * * * * * * *
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	.	DECR	1.15	.79	.65	.80	.79	.89	.81
.	.	.	STAB	.58	1.10	.90	.81	.61	.60	.46
.	.	.	INCR	.76	.56	.40	.18	.32	.43	.41

TABLE/VARIABLE 33 CELL MEANS FOR TEST Y.X

SERVICE CAPABILITY GENERAL LIBRARY MEDIA READ

******** C E L L ********				**** * * * * * * * Y E A R * * * * * * * * *
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	.	LOW	.	.78	.84	.59	.61	.48	.57	.38
.	.	HIGH	.	.92	.86	.72	.68	.80	.61	.84

TABLE/VARIABLE 33 CELL MEANS FOR TEST Y.W

SERVICE CAPABILITY GENERAL LIBRARY MEDIA READ

******** C E L L ********				**** * * * * * * * Y E A R * * * * * * * * *
ENROL SIZE	WEALTH	EXPEND	ENROL TREND	69-70	70-71	71-72	72-73	73-74	74-75	75-76
.	LOW	.	.	.63	.92	.56	.45	.35	.45	.52
.	HIGH	.	.	1.02	.77	.71	.82	.83	.86	.63

TABLE/VARIABLE 33 CELL MEANS FOR TEST Y.WX

SERVICE CAPABILITY GENERAL LIBRARY MEDIA REAL

******** C E L L ******** ENROL SIZE	WEALTH	EXPEND	ENROL TREND	**** * * * * * * * Y E A R	69-70	70-71	71-72	72-73	73-74	74-75	75-7
.	LOW	LOW	.		.60	1.07	.47	.46	.31	.38	.4
.	LOW	HIGH	.		.72	.52	.83	.44	.47	.64	.6
.	HIGH	LOW	.		1.01	.52	.76	.81	.70	.82	.3
.	HIGH	HIGH	.		1.03	1.05	.66	.82	.97	.89	.9

sample districts was reported in the elementary and secondary library categories. The data in Table 33 indicate general library media and reading service capability exhibits a decrease in the third year followed by a relative leveling in service capability for the remainder of the seven year period. When examined by enrollment trend, the increasing enrollment districts exhibit a rise in service capability over the last three years the stable districts exhibit a continuing decline, and the decreasing enrollment districts indicate a leveling in service capability. Also, low expenditure districts exhibit a continuing decline whereas high expenditure districts climb after reaching a low point in 1972-73 school year. When categorized by wealth level the low wealth districts exhibit a significant drop from the second to the fourth year followed by a leveling, whereas the high wealth districts exhibit a drop over the first three years followed by leveling. The wealth by expenditure level interaction shows that a high wealth low expenditure districts exhibit the greatest lost over the seven year span whereas low wealth high expenditure districts after dropping increased to a level slightly above their beginning point in 1969-1970.

TABLE/VARIABLE 35 CELL MEANS FOR TEST Y.WX

SERVICE CAPABILITY SECONDARY LIBRARY MEDIA HEAD

******** C E L L ******** ENROL SIZE	WEALTH	EXPEND	ENROL TREND	**** * * * * * * * * Y E A R * * * * * * * * * *** 69-70	70-71	71-72	72-73	73-74	74-75	75-76
•	LOW	LOW	•	1.99	1.28	1.00	1.09	1.10	1.14	1.51
•	LOW	HIGH	•	.94	1.09	.56	.47	1.10	1.02	1.53
•	HIGH	LOW	•	.40	1.53	.85	.77	.94	.99	1.08
•	HIGH	HIGH	•	1.28	.65	.99	.97	.85	.82	.86

V. Conclusions

Subject to the limitations of study and based on findings reported above, the following conclusions were drawn:

A. Elementary service capability for the state as a whole showed no significant change during the study period except in the category of General Music which tended to increase. Some changes did occur in some types of districts. There was a decrease in early elementary service capability among small, low wealth districts. In elementary physical education, service capability showed a convergent trend[4] with high expenditure districts decreasing and low expenditure districts increasing. It is important to note that no change occurred in all districts taken collectively or in relation to independent variables in four categories; Classroom Instruction Grades 1-6, Art, Remedial Reading, and Instrumental Music.

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[4] A convergent trend is defined as a tendency for high levels of service capability to decline while low levels tend to increase across the study period; in other words a decrease in variability among types of districts.

B. Secondary service capability for the state as a whole changed significantly in five out of fifteen categories. Service capability increased in Business and Distributive Education; decreased in English Language Arts, Foreign Language, and Natural Science; and Music increased to mid-period and then decreased to its original level. Changes which occurred among some types of districts included a) a convergent trend in Art and Business and Distributive Education service capabilities with high wealth districts decreasing and low wealth districts increasing, b) the largest decrease in Foreign Language was among high-wealth, increasing enrollment districts, c) the largest drop in Natural Science service capability tended to be among small, high-expenditure districts. It is important to note that no change in service capability occurred in all districts taken collectively or in relation to independent variables in seven categories; Total Regular Secondary Instruction, Agriculture, Health-P.E.-Safety, Home Economics, Industrial Arts, Mathematics, and Social Science.

C. Both elementary and secondary special education service capabilities have increased dramatically in all districts collectively. At the secondary level the high wealth, increasing enrollment districts increased service capability most rapidly. There was no change in service capability in all districts taken collectively or in relation to independent variables for the pupil personnel category (counselors, psychologists, social workers, etc.)

D. Library-audio visual service capability for all districts remained essentially unchanged across the study period. Among types of districts there was a tendency toward convergence between low-wealth

low expenditure (declining) and high wealth low-expenditure (increasing) districts within the secondary service capability category.

E. While the statistics on line administrative service capabilities indicate significant changes, the practical importance of these changes appears minimal. In general, small enrollment districts have higher service capabilities as a natural function of their size. Changes in service capabilities are associated with a) enrollment fluctuation, b) a lag in personnel actions in response to enrollment change and c) the generally small FTE numerator in the service capability equation. Elementary line administration service capability (principals) increased for low expenditure districts and decreased for high expenditure districts.

F. Service capability statistics derived in progammatic areas where the FTE staff numerator is naturally low such as Trade and Industrial Education, are subject to greater variability relative to scale of measure. As a result, small numerical changes acquire statistical significance which may be of relatively little educational importance except in the particular district(s) where the change occurred. This problem, primarily associated with the use of statistical tests, would diminish as the number of districts included in the analysis increases in relation to the number of independent variables. Futher research dealing with this problem might explore a) methods of smoothing fluctuations (primarily of value for descriptive purposes), b) the use of trend analaysis or fitting of orthogonal polynomials to reduce sensitivity to statistical significance, c) analyses based on methods not requiring assumptions of normal distributions.

G. The concept of service capability as a statistic for monitoring state-wide trends in educational programs has demonstrated sufficient robustness to merit trial implementation on a state-wide basis as an indicator of programmatic trends in a state-level educational governance/management monitor system. The fiscally neutral nature of the statistic makes it an additional and valid measure of equal access to educational opportunity for comparison of districts and groups of districts within state-local educational systems.